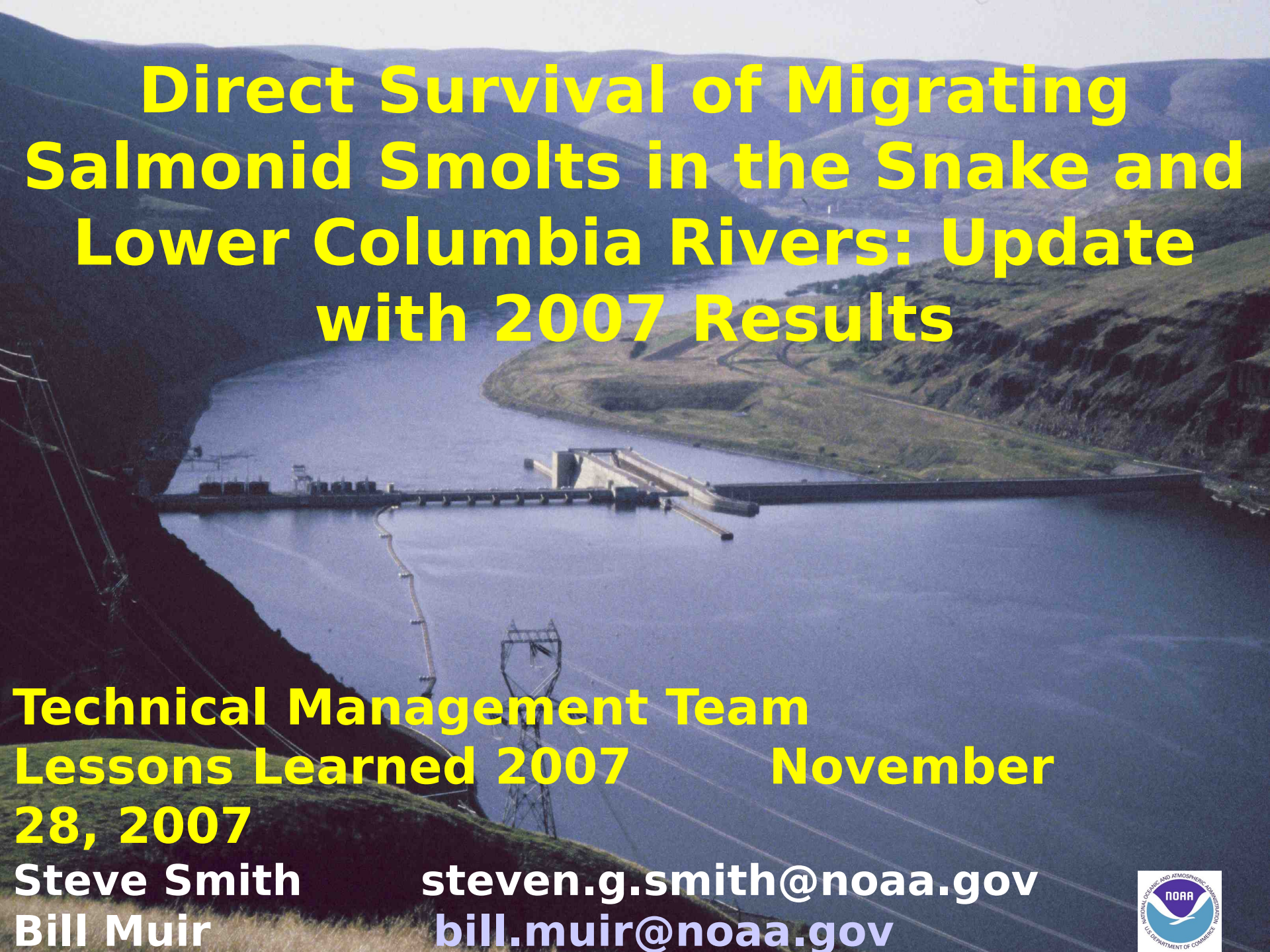
Direct Survival of Migrating Salmonid Smolts in the Snake and Lower Columbia Rivers: Update with 2007 Results



Technical Management Team
Lessons Learned 2007 November 28, 2007

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Bill Muir bill.muir@noaa.gov

Outline

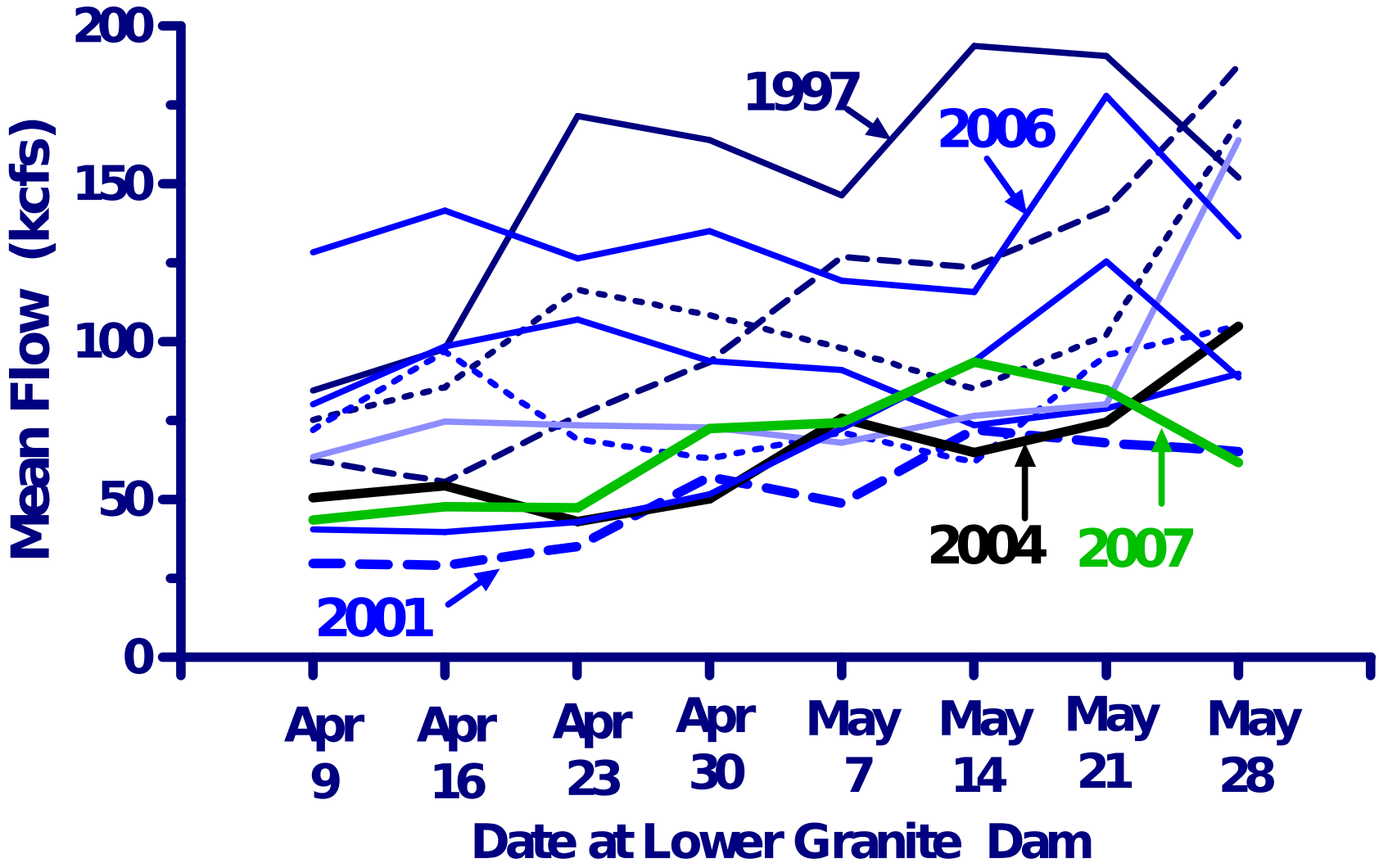
- Juvenile survival and travel time through the hydropower system
- Percentage transported

  – Update with preliminary 2007 results

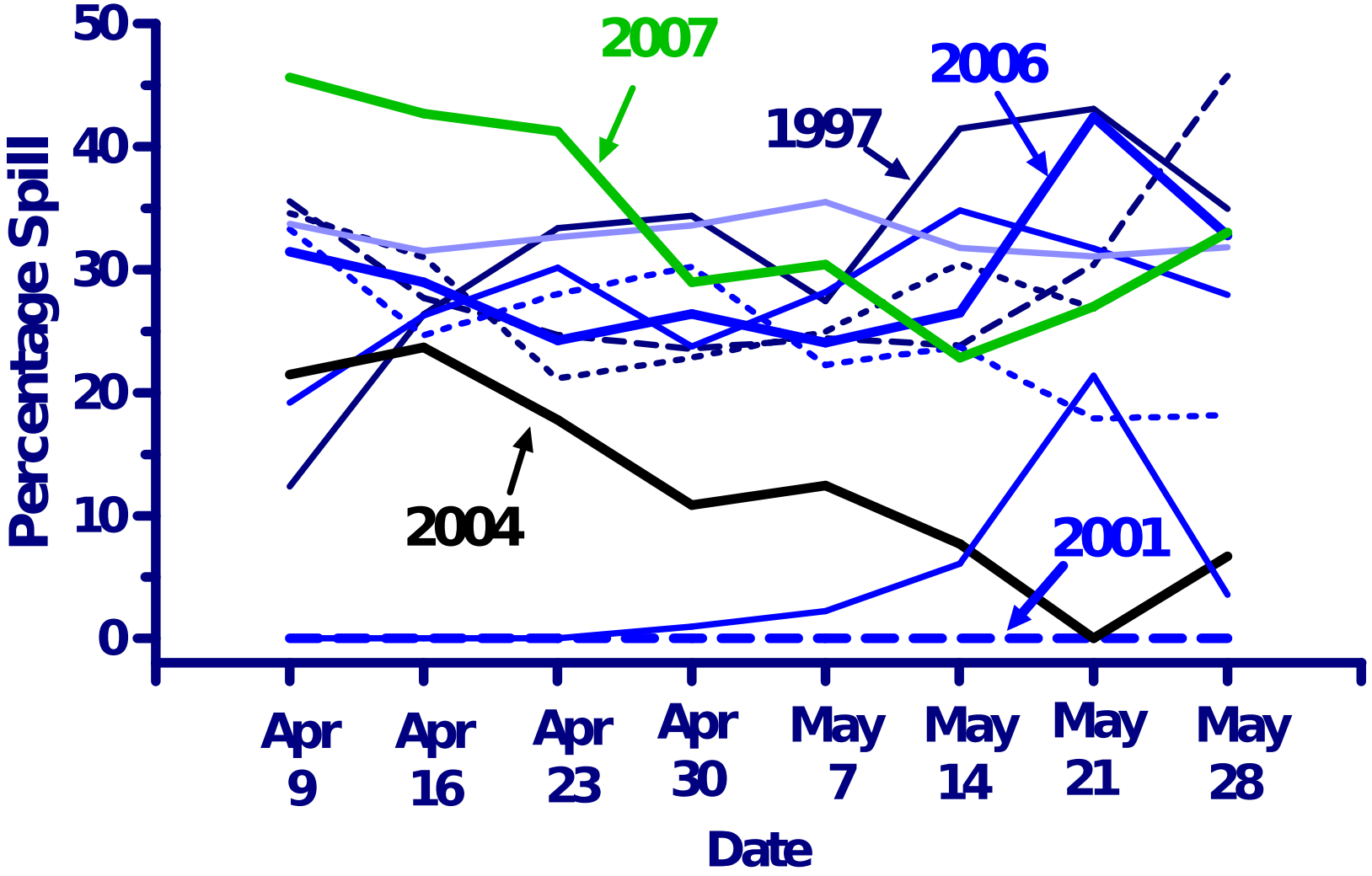
    - Annual summer “survival memo” released 31 August 2007
    - Presentation at NWPCC Science Policy Exchange 12 September 2007

Survival and Travel Time for PIT-tagged Spring Migrants

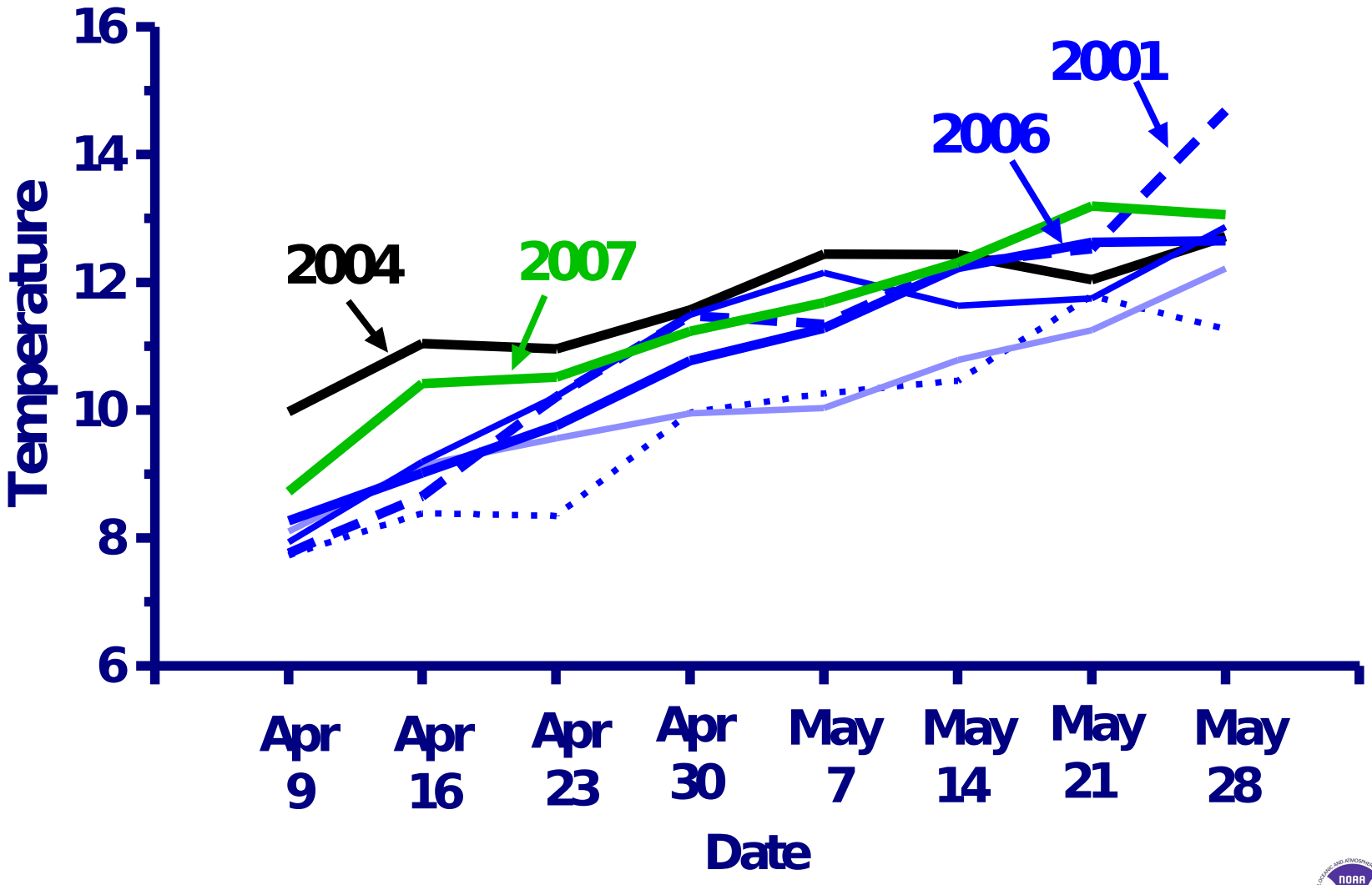
Weekly Mean Flow (kcfs)
Lower Granite Dam



Mean Percentage Spilled
LGR, LGS, LMN



Weekly Mean Temperature
Little Goose Dam



PIT-tag Data Sources

Chief Joseph

Wells

Grand Coulee

Rocky Reach

Rock Island

Wanapum

Priest Rapids

Ice Harbor

Lower Monumental

Little Goose

Lower Granite

Snake R. trap

Juvenile detectors

Hatchery &
Trap Releases

Bonneville

The Dalles

John Day

McNary

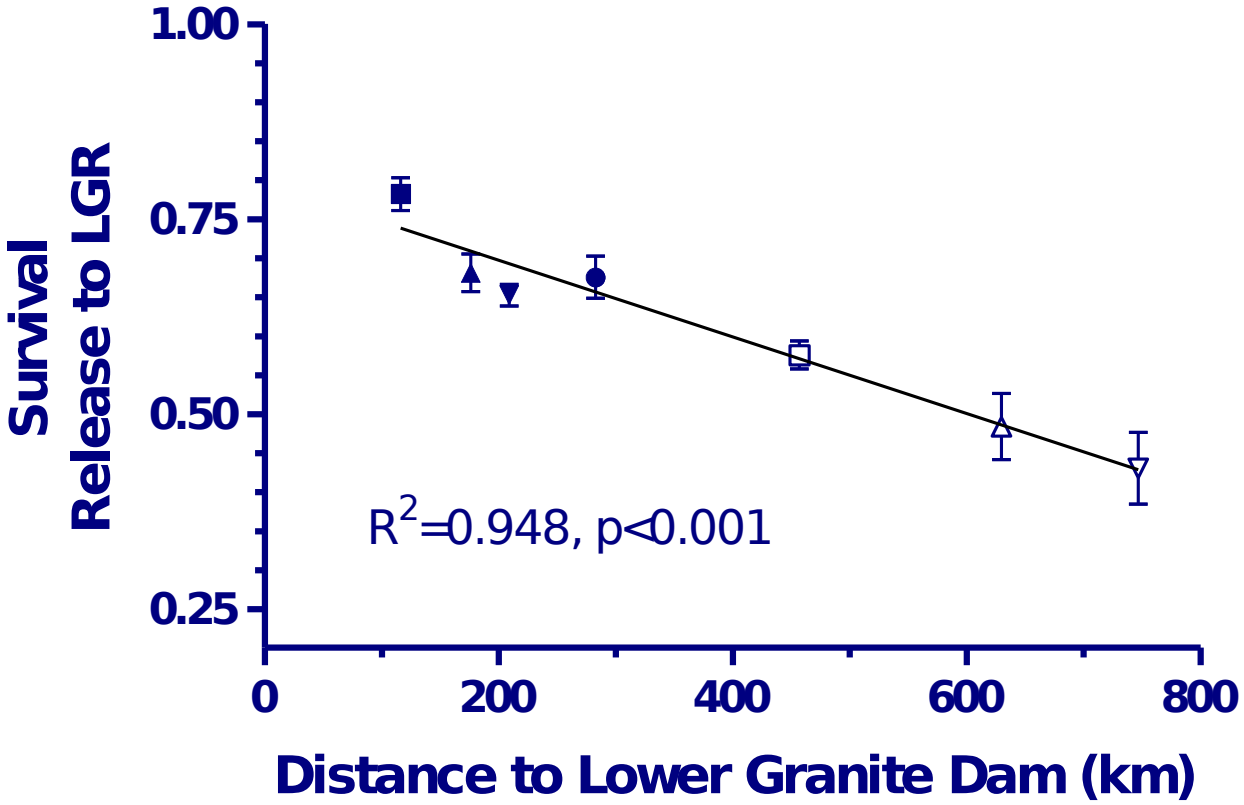
Hells Canyon

Oxbow

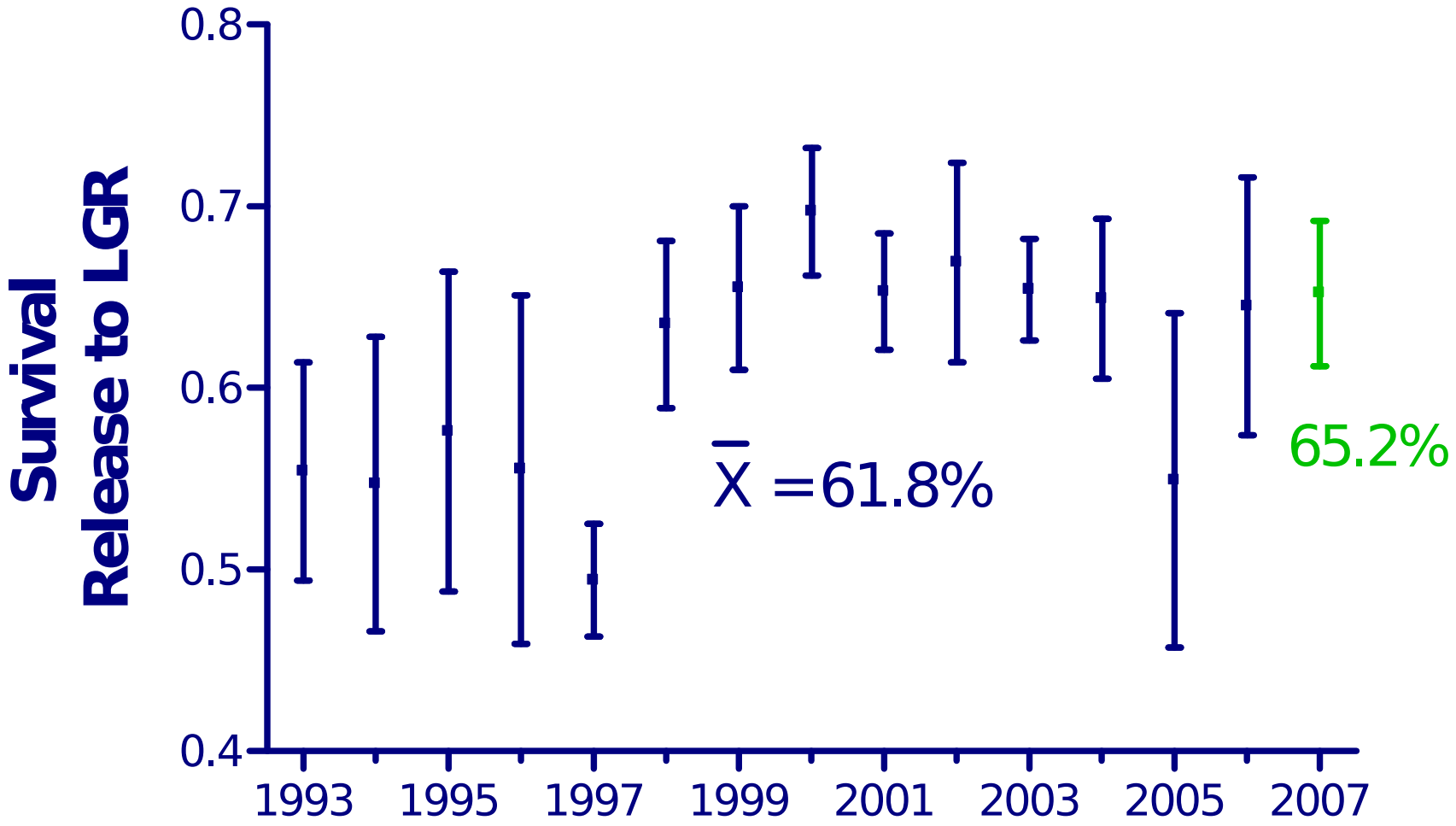
Brownlee

N

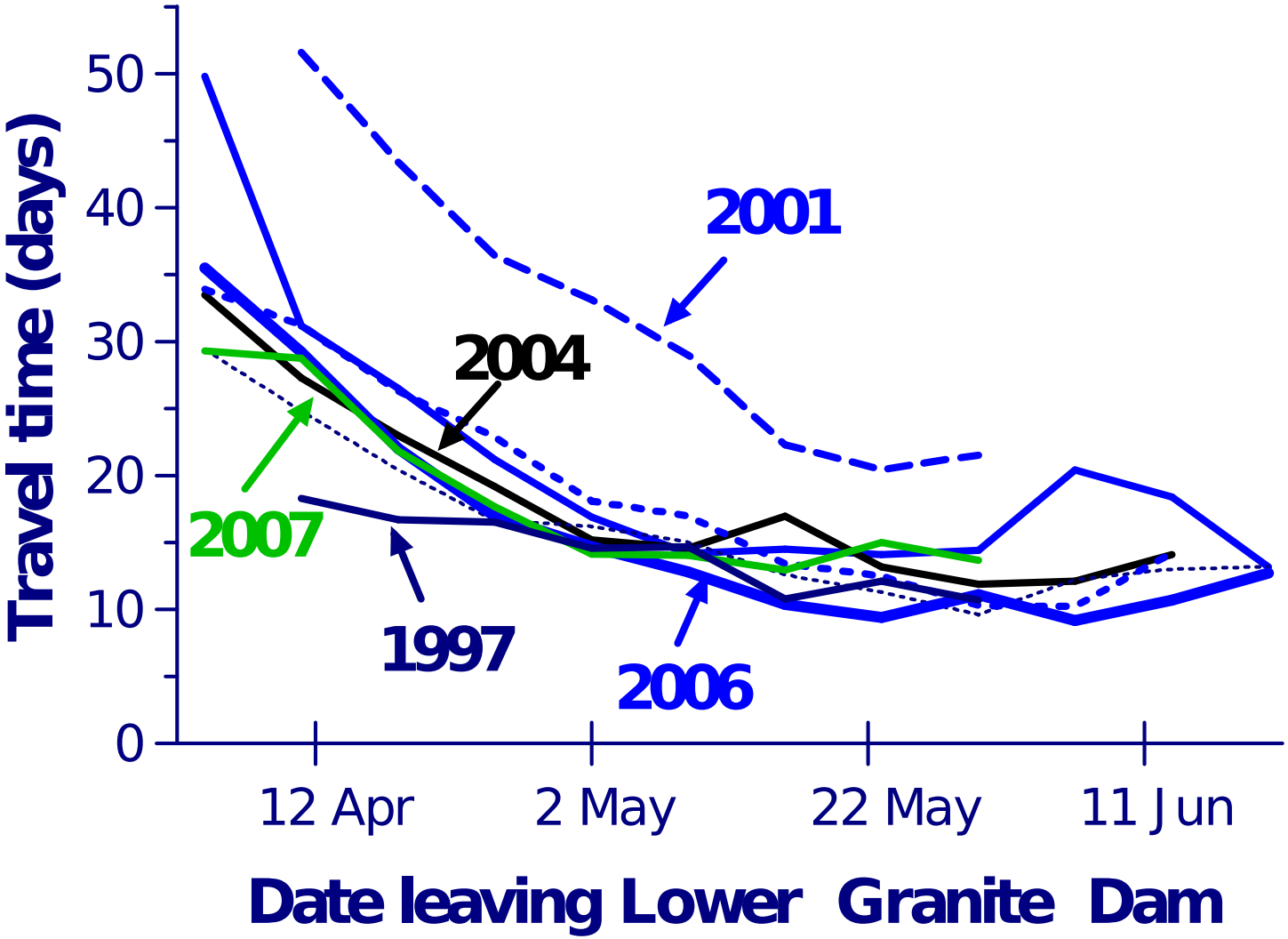
Hatchery stream type Chinook (1993-2007)



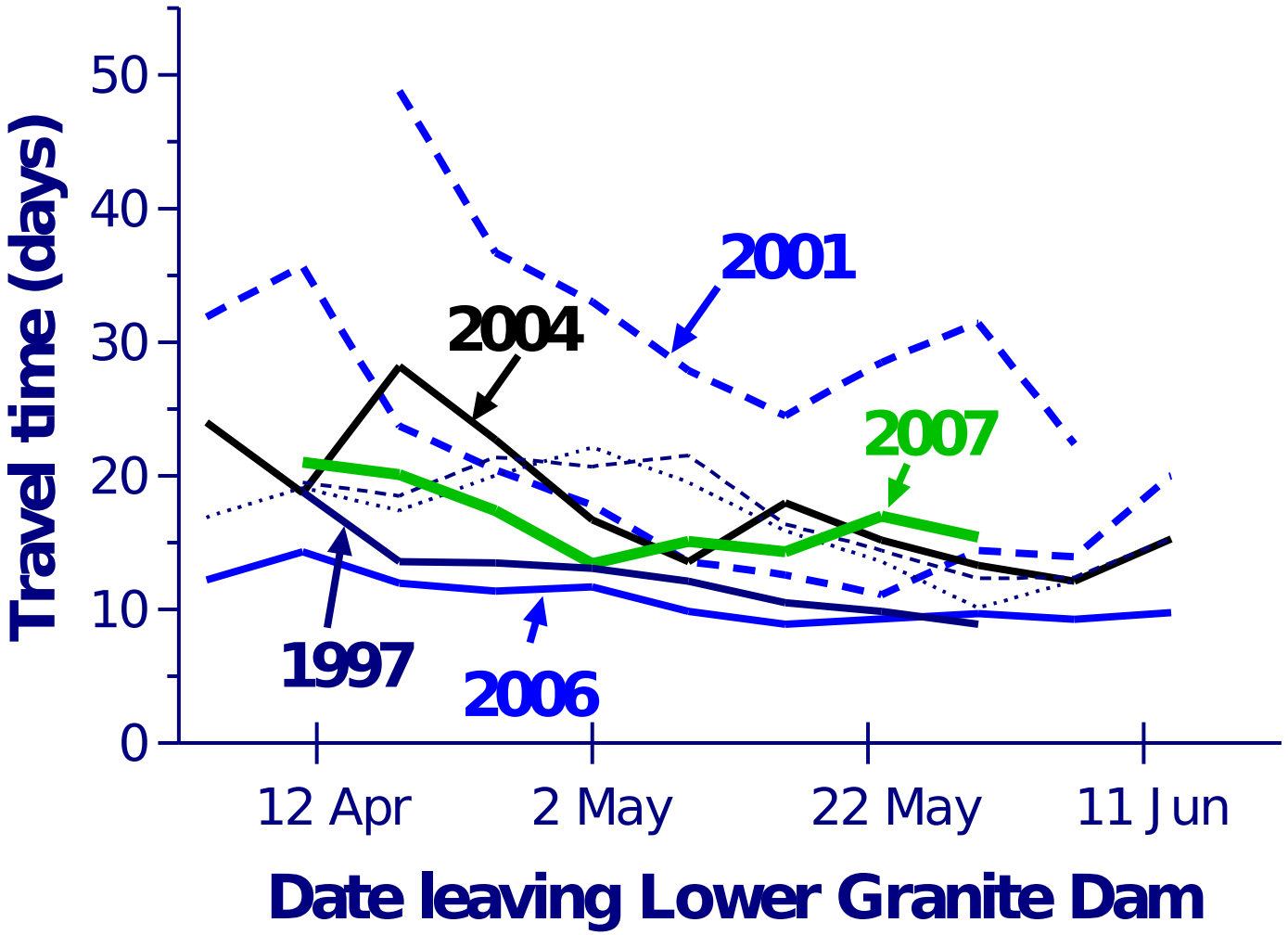
Stream type Chinook
Snake River Basin Hatcheries
Mean of index groups

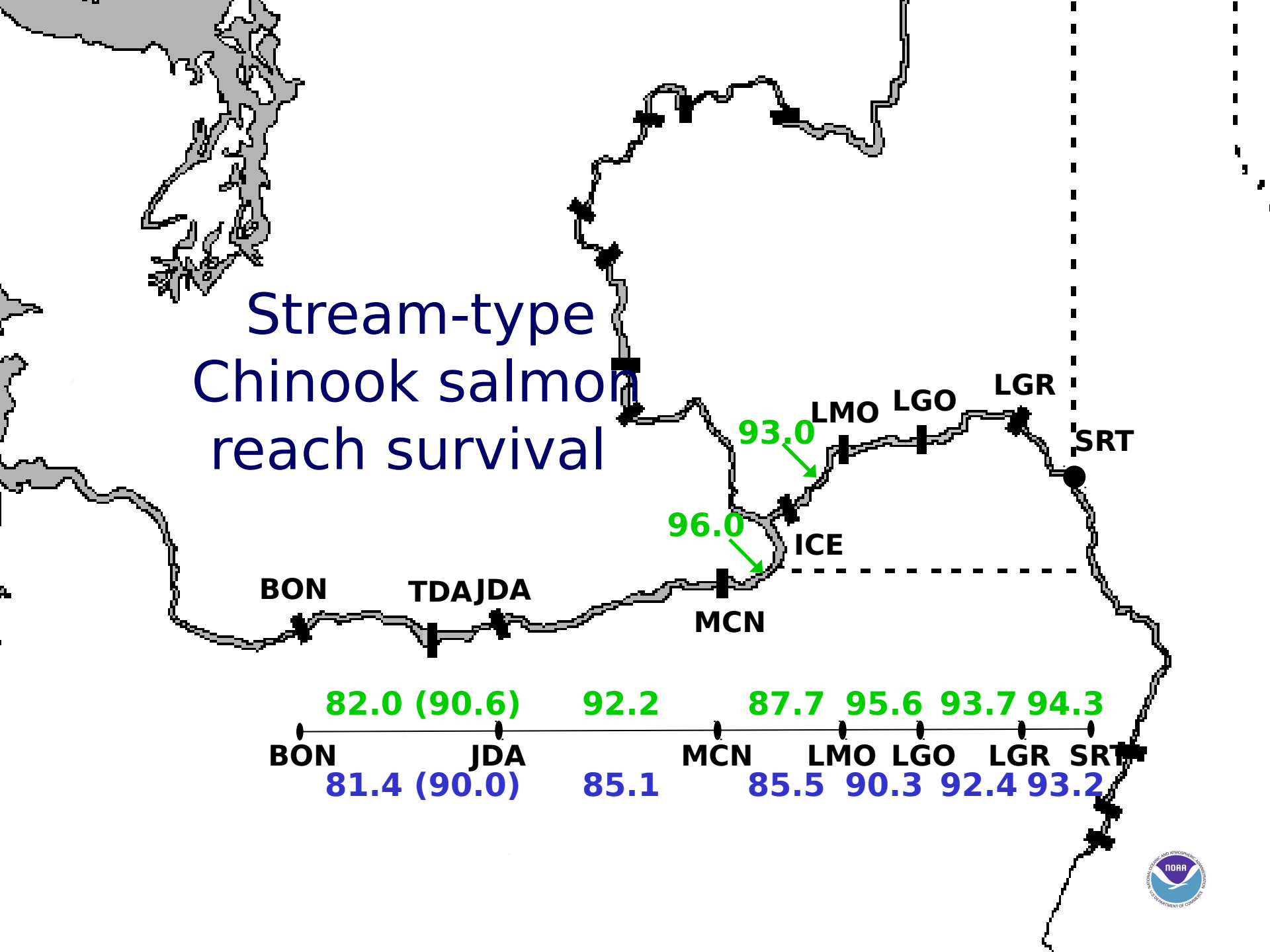


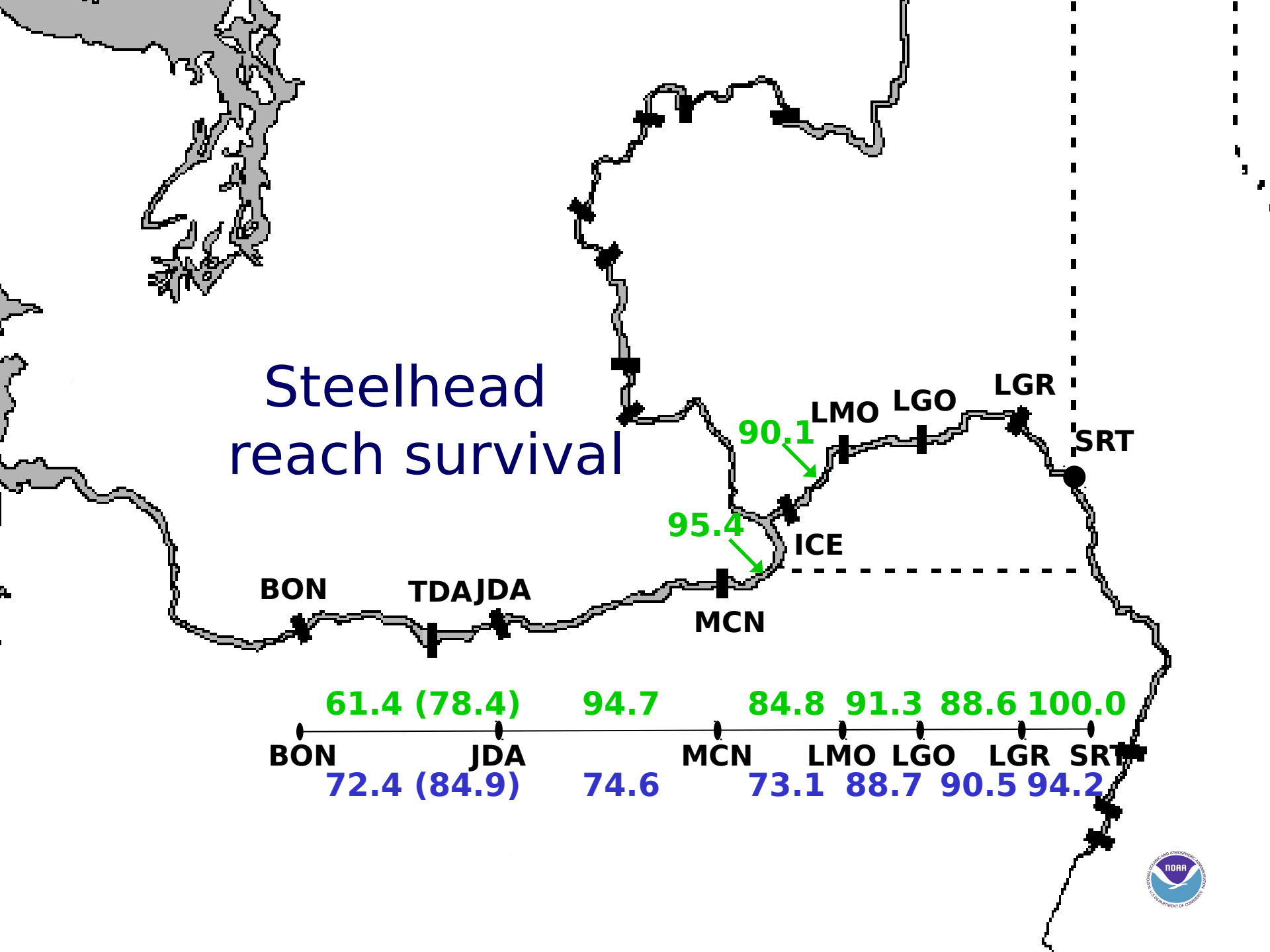
Stream-type Chinook median travel time
Lower Granite to Bonneville (461 km)



Steelhead median travel time
Lower Granite to Bonneville (461 km)

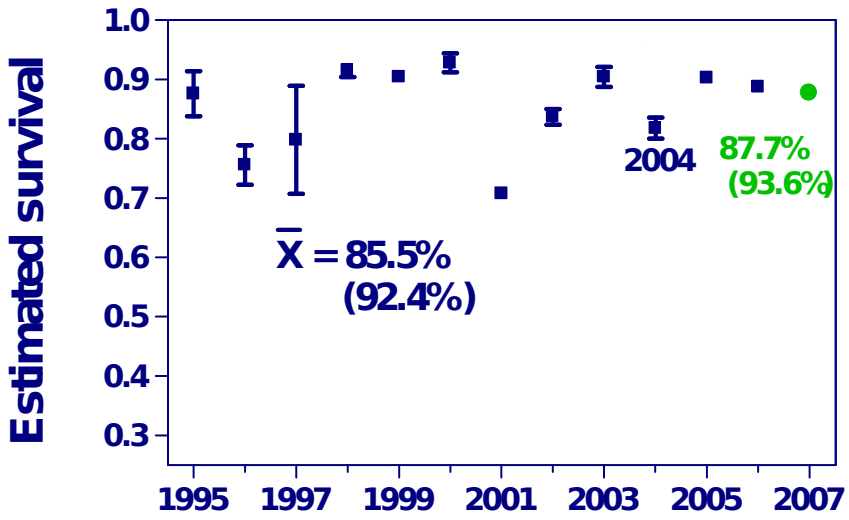



Stream-type
Chinook salmon
reach survival
LMO
LGO
LGR
SRT
93.0
96.0
ICE
BON
TDA
JDA
MCN
82.0 (90.6)
92.2
87.7
95.6
93.7
94.3
BON
JDA
MCN
LMO
LGO
LGR
SRT
81.4 (90.0)
85.1
85.5
90.3
92.4
93.2

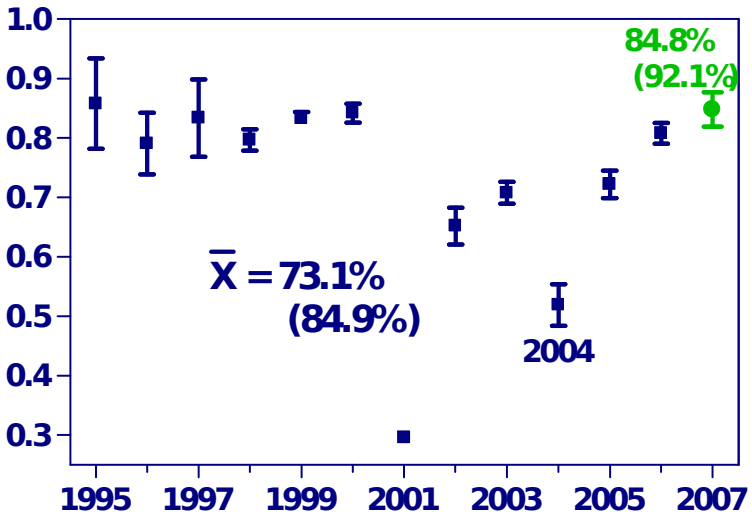

Steelhead
reach survival
LGR
LGO
LMO
SRT
90.1
95.4
ICE
BON
TDA
JDA
MCN
61.4 (78.4)
94.7
84.8
91.3
88.6
100.0
BON
JDA
MCN
LMO
LGO
LGR
SRT
72.4 (84.9)
74.6
73.1
88.7
90.5
94.2

Lower Monumental to McNary

Stream type Chinook

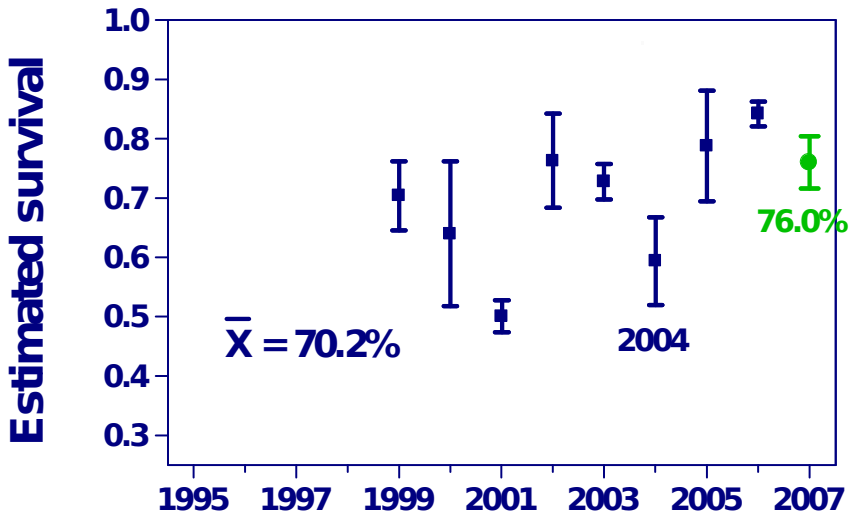


Steelhead

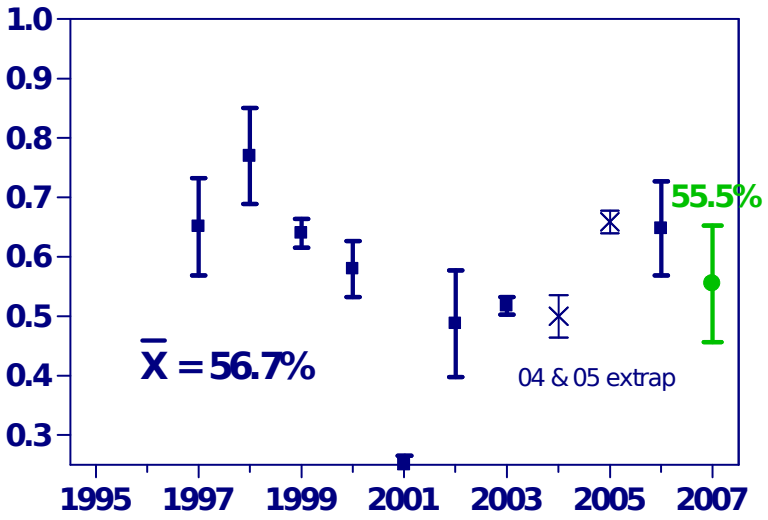


McNary to Bonneville

Stream type Chinook

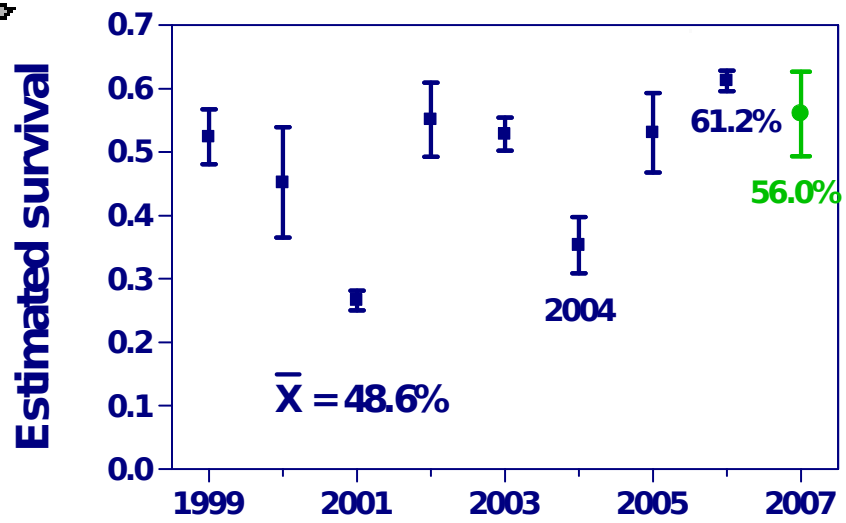


Steelhead

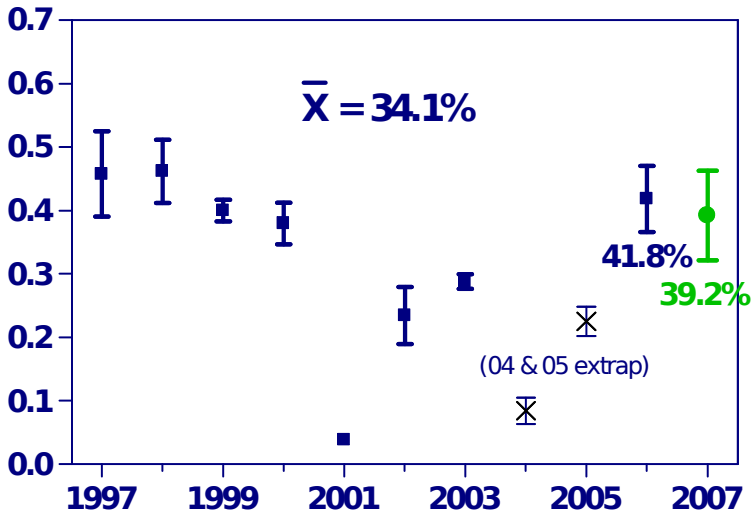


Snake River Trap to Bonneville

Stream type Chinook



Steelhead



Percentage of fish transported

Percentage of fish transported

Estimation of percentage of non-tagged fish is difficult!

- Requires estimate of total number of non-tagged smolts

- Data from PIT-tagged fish, but:
  - groups are treated differently, (almost) none like non-tagged fish
  - distribution of tagged fish not the same as non-tagged

- Transport started in middle of season
  - Proportion transported depends on travel times, etc.

Percentage of fish transported

Preliminary estimates for 2007 based on PIT-tag data:

- 24% of non-tagged stream type Chinook
- 33% of non-tagged steelhead

Percentage of fish transported

Why so low in 2007?

- Transportation started late
  - 57% of wild chinook past LGR before May 1
  - 24% of steelhead
- Low proportion of fish in bypass at Little Goose and Lower Monumental
  - Given percentage of spill more attractive in low flow?

Questions